



PCT/GB 00/02505

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| REC'D 05 OCT 2000 | INVESTOR IN PEOPLE |
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Cardiff Road  
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NP10 8QQ

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GB 00/02505

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I also certify that the attached copy of the request for grant of a Patent (Form 1/77) bears an amendment, effected by this office, following a request by the applicant and agreed to by the Comptroller-General.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

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Signed

Andrew Gersey

Dated 21 September 2000

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THE PATENT OFFICE

30 JUN 1999

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The Patent Office

30 JUN 99 E458285-1 C53241  
P01/7700 0.00 - 9915148.2

# Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

The Patent Office

Cardiff Road  
Newport  
Gwent NP9 1RH

1. Your reference

AGH 280699

2. Patent application number  
(The Patent Office will fill in this part)

9915148.2

3. Full name, address and postcode of the or of each applicant (Underline all surnames)

ADRIAN GERALD HODD  
THE PLYMOUTH  
WATERS EDGE  
PORT LAMALLE  
VARNMOUTH

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

ISLE OF WIGHT, PO41 0XD.

685500 9001

4. Title of the invention

"IMPROVEMENTS RELATING TO BOAT MAINTENANCE"

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

BARKER BRETTELL  
MEDINA CHAMBERS  
TOWN QUAY  
SOUTHAMPTON  
SO14 2AQ

Patents ADP number (if you know it)

07442494001

FS1/77 21/9/2000

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

| Country | Priority application number (if you know it) | Date of filing (day / month / year) |
|---------|--|-------------------------------------|
|         |  |                                     |

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

| Number of earlier application | Date of filing (day / month / year) |
|-------------------------------|-------------------------------------|
|                               |                                     |

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

- a) any applicant named in part 3 is not an inventor, or
  - b) there is an inventor who is not named as an applicant, or
  - c) any named applicant is a corporate body.
- See note (d))

# Patents Form 1/77

9. Enter the number of sheets of any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form

Description

ONE TWO

Claim(s)

ONE

Abstract

ONE

Drawing(s)

THREE + 3

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

11.

I/We request the grant of a patent on the basis of this application.

Signature

*Adrian Hudd*

Date 28/6/99

12. Name and daytime telephone number of person to contact in the United Kingdom

ADRIAN HUDD (01983) 760 399

## Warning

After an application for a patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you live in the United Kingdom, Section 23 of the Patents Act 1977 stops you from applying for a patent abroad without first getting written permission from the Patent Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked.

## Notes

- If you need help to fill in this form or you have any questions, please contact the Patent Office on 0645 500505.
- Write your answers in capital letters using black ink or you may type them.
- If there is not enough space for all the relevant details on any part of this form, please continue on a separate sheet of paper and write "see continuation sheet" in the relevant part(s). Any continuation sheet should be attached to this form.
- If you have answered 'Yes' Patents Form 7/77 will need to be filed.
- Once you have filled in the form you must remember to sign and date it.
- For details of the fee and ways to pay please contact the Patent Office.

CONFIDENTIAL

## IMPROVEMENTS RELATING TO BOAT MAINTENANCE

### General

According to the first aspect of the present invention, there is provided an automatic boat scrubber comprising a framework, adapted for location under water, on which is mounted a cleaning head movable, in use, to follow the underwater contour of a ship, or boat, and operable, in use, to remove fouling therefrom.

### Background

Anti-fouling paints are becoming increasingly expensive and because of world wide anti-pollution laws the paints available to both the Commercial and Leisure industries are becoming less effective.

It is common practice for both power and sailing craft to be cleaned at least twice a year and where performance and fuel economy is required, this can increase significantly.

### The Automated Boat Scrubber

The purpose of the automated boat scrubber is to provide a means of cleaning the bottom of ships and boats whilst still afloat. The unit consists of a single or multiple pair of rotating brushes operating under the water. The brushes are mounted on long arms pivoted from below the craft and move up and down allowing the brushes to follow the contours of the hull. The unit will be capable of being installed in a permanent location or constructed to be manoeuvrable.

### Example

Embodiments of the invention will now be described, by way of example, with reference to the accompanying drawings, in which: Figure 1 illustrates.

The brushes (A) are attached to long arms (B) that are mounted onto a axial (C) which is mounted onto a frame (D). The axial is rotated by a rod (E) mounted on a single upright (F) so no part the unit extends out making navigation difficult. The arms are pivoted to allow movement in and out from the centre of the hull while rotating the axial moves the arms/brushes up and down. In this example the arms will align to the centre line of the hull as opposed to having to keep the hull in the centre of the unit. By lowering the arms under the hull the berth can be used for normal mooring of craft when the unit is not in use.

The method is to traverse the boat through the unit or in the case of the unit mounted between pontoons the unit can move down the hull. Figure 2 shows the boat being pulled through the unit with aid of a winch. The unit detects when the brushes clear the hull and reverses the direction of the arm movement, thus eliminating unnecessary stroke of the arms. The speed can be varied according to the time taken for each stroke e.g. Water level to bottom of the hull and visa versa. The procedure of the arms moving up and down allowing the brushes to follow the contour of the hull whilst the hull is pulled through the unit is continued until the hull clears the unit.

### Operation

A typical operation is as follows.

The unit is place on the sea bed adjacent to a harbour wall or pontoon. A boat moors against the harbour wall and attaches a bow and stern line to the winch of the unit. The arms are raised to water line and then closed so the brushes, which are rotating make contact at the bows. The boat discards the shore mooring lines just keeping the bow and stern lines attached to the winch. In this example the cleaning routine is automated so once positioned the start button is pushed. The unit records the water level and moves the brushes down until the meet under the hull, thus detected the arm movement is reversed bringing the arms back to the water level. At the same time the boat is advanced through the unit by the winch as the arms move down again repeating the action. this is repeated continually until the boat clears the unit. If the brushes foul an object, the automated program will stop and make several attempts to clear the obstruction before stopping and allow a manual operation to continue.

### Variations

The unit described sits on the sea bed but can equally be suspended bellow the water from piles or from pontoons. Equally the brush configuration can be cylindrical, circular, orbital. etc. or a combination. in order to obtain optimum results. As well as basic cleaning, antifouling agents can be applied by the same procedure.

## CLAIMS

**1 An automated boat scrubber comprising a framework, adapted for location under water, on which is mounted a cleaning head movable, in use, to follow the underwater contour of a ship, or boat and operable, in use, to remove fouling therefrom.**

**2 The Automated Boat Scrubber as in claim 1 wherein the cleaning heads are mounted on arms pivoted bellow the hull allowing the rotating brushes to press against the hull.**

**3 The Automated Boat Scrubber as in claim 1 and 2 above wherein the arms are attached to a frame that allows the arms to move up and down permitting the brushes to follow the contours of the hull.**

**4 The Automated Boat Scrubber as in claim 2 and 3 above wherein the cleaning heads are restricted from crossing the centre line when no hull is present by means of detecting their position from the frame work.**

**5 The Automated Boat Scrubber as in claim 2 and 3 above wherein the cleaning heads align to the craft instead of having to align the craft to the centre of the BoatScrubber.**

**6 The Automated Boat Scrubber as in claim 2 and 3 above wherein the cleaning heads can take the form of, or a combination of Brushes, Sponges, etc. or Air and/or Water pressure.**

**7 The Automated Boat Scrubber as in claim 1 will have fitted a means of propelling the hull past the unit and visa versa.**

**8 The Automated Boat Scrubber as claimed in any proceeding claim wherein the cleaning heads can be used to apply substances that can applied under water, such as antifouling agents, paints and substances to reduce surface tension.**

**9 An automatic boat scrubber substantially as hereinfoe described with reference to Figure 1 of the accompanying drawings.**

**10 The Automated Boat Scrubber as claimed in any preceding claims can be mounted from a floating platform/platforms to allow the operation to be performed whilst the boat/ship is moored.**

## **ABSTRACT**

### **Automated Boat Scrubber**

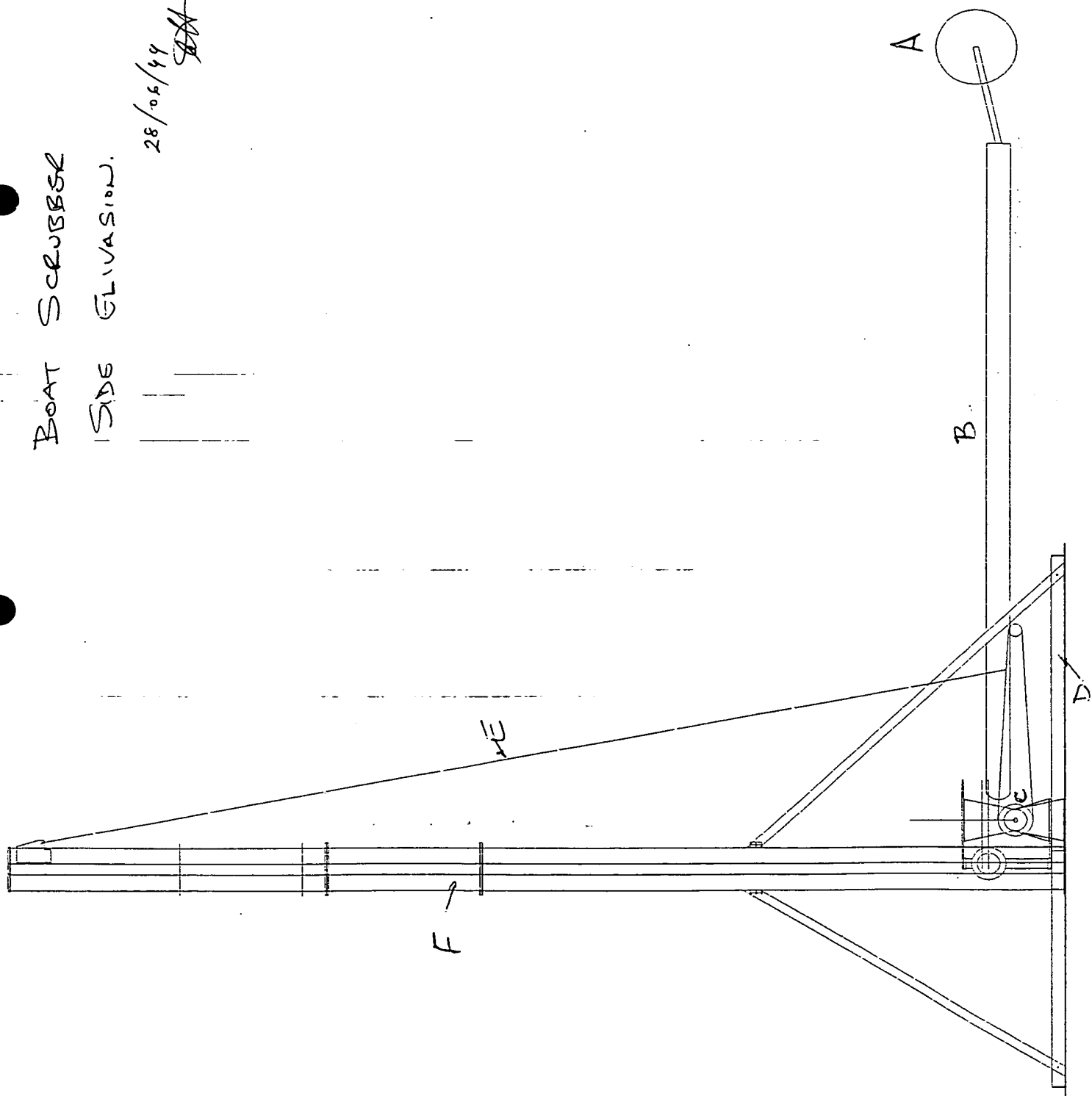
The automated boat scrubber is a means of cleaning the under water sections of a Ship or Boat without the need of slipping, craning out or dry docking. The unit can either be permanently installed in a dock area or marina or be suspended between pontoons or piles. The principle of the unit is to have cleaning heads that are mounted on to arms that position the heads so that they follow the contours of the hull. This is achieved by adjusting their position against the hull and moving them down until the heads meet below the hull. The unit or craft is then moved so the action can be repeated until the whole craft is cleaned.



BOAT SCRUBBER  
SIDE GLASSION.

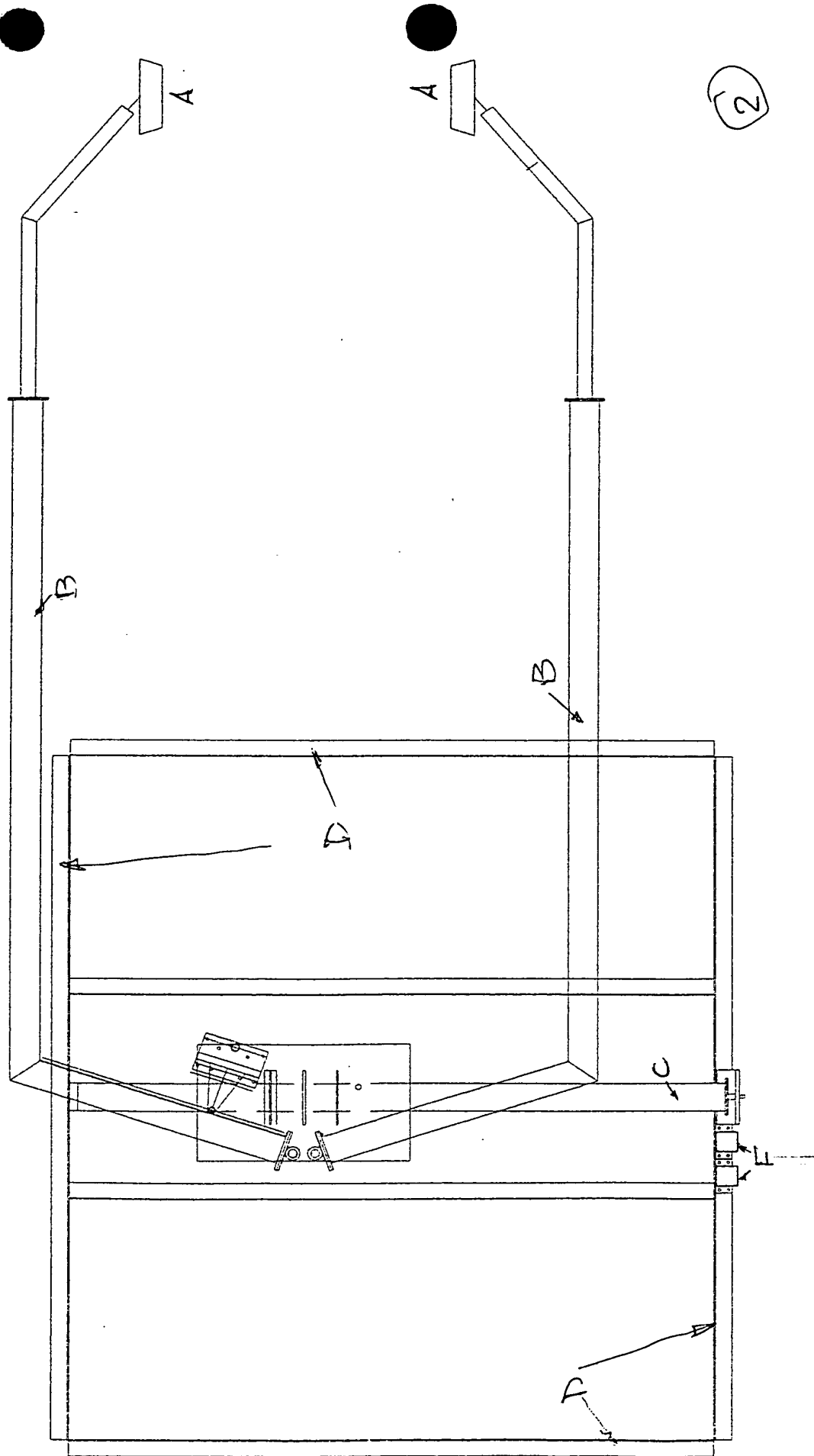
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BOAT SCRUBBER  
PLAN VIEW: 28/06/99 *alt*

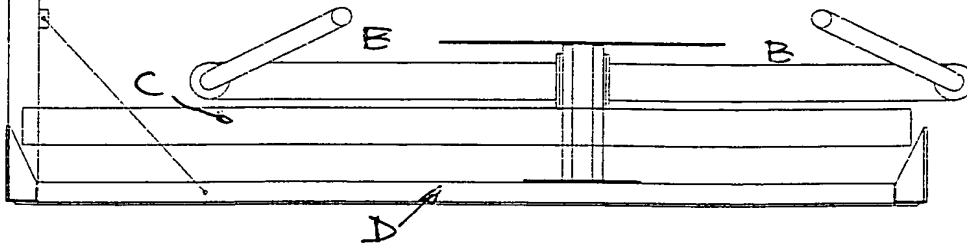




SOAT SCRUBBER

END ELEVATION (WITHOUT BRUSHES)

28/06/99  
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PCT GB 00 02505  
Barlow Benthall  
12/9/2000